



AMERICAN ACADEMY *of* ACTUARIES

Non-Elective Incidence Reserve Proposal

AG33 Non-Elective Task Force

**Presented to the National Association of Insurance Commissioners'
Life Actuarial Task Force**

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AG33 Non-Elective Task Force
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Executive Summary

Actuarial Guideline XXXIII (AG33) applied to annuities may result in a reduced statutory reserve when a contract contains both non-elective¹ non-mortality benefits and benefits that can be more valuable than the accumulation value. Benefits that can be more valuable than the account value include guaranteed living benefits and death benefits. These benefits may continue after the account value has been depleted.

The non-elective non-mortality benefits that we focus on in this report are primarily waiver of surrender charges for specified contingent events such as confinement to a nursing home, disability, or diagnosis of a terminal illness, anything other than death. The benefit is payment of the contract account value rather than the cash value, if the contract owner chooses to report the claim and collect the benefit (in this sense, these benefits are non-elective only in the context of the definition in AG33). Payment of such benefit terminates the contract.

AG33 can be interpreted as allowing, within the projection of integrated benefit streams, the incidence rates for non-elective non-mortality benefits to be in effect *for the life of the contract*. In such integrated benefit streams after a non-elective non-mortality incidence, the contract would pay only the account value for those incidences, releasing portions of the liability early for benefits that in reality are likely to be incurred.

This report explains the issue, demonstrates the magnitude conceptually and with a numerical example, proposes AG33 revision language, and discusses various approaches considered.

¹ AG33 defines non-elective and elective benefits as part of that codification:

“Non-Elective Benefits: Benefits that are payable to contract owners or beneficiaries only after the occurrence of a contingent or scheduled event independent of a contract owner’s election of an option specified in the contract, including (but not limited to) death benefits, accidental death benefits, disability benefits, nursing home benefits, and benefits payable under either a deferred or immediate annuity contract (with or without life contingencies), where no benefit options are available under the terms of the contract.

Elective Benefits: Benefits that do not fall under the non-elective benefits category (i.e., benefit options that may be freely elected under the terms of the contract). Elective benefits include (but are not limited to) full surrenders, partial withdrawals, and full and partial annuitizations.

In some cases it may not be clear whether some benefits are elective or non-elective. For example, some annuity contracts offer benefits which vary depending upon the age of retirement. In such cases, the Valuation Actuary should use judgment in making this determination, by considering factors such as the degree to which contract owner actions would be influenced by the availability of the benefit.”

Background

In February 2013, the American Academy of Actuaries' Annuity Reserves Work Group (ARWG) received a paper, "ARWG AG33 Discussion: Adverse Benefit Combination" from John Blocher, which prompted the Academy's Life Valuation Subcommittee to create the AG33 Non-Elective Incidence Task Force to investigate the potential reserve issues raised in the paper and recommend modifications to AG33 for consideration by the Life Actuarial Task Force (LATF) of the National Association of Insurance Commissioners (NAIC).

The purpose of this document is to provide LATF with a recommendation to modify the existing annuity statutory valuation requirements in AG33.

Scope

This proposal, if adopted, affects reserve calculations under AG33. Applicability of the proposal language or concepts to other actuarial guidelines and valuation manual items is outside the scope of this report. LATF may want to consider whether a similar concept might be useful for Actuarial Guideline XLIII's (AG43) Basic Reserve (BR) & Basic Adjusted Reserve (BAR), correspondingly VM-21's BR and BAR, and VM-22's reserve method currently under development.

Issue Statement

Using AG33 may not always result in a level of reserves that is consistent with AG33's general valuation approach when one or more non-elective benefits other than death are incorporated into contracts having elective benefits more valuable than the contract account value. Generally speaking, an annuity contract may contain two groups of benefits:

Benefit Groupings	General Description
Group A	These are non-elective benefits that are tied to a contingent event other than death (denoted as "non-mortality"). Examples of non-elective non-mortality benefits are waiver of surrender charges due to a specified contingency such as: confinement to a nursing home; disability; diagnosis of a terminal illness or specified critical illness; inability to perform activities of daily living; early retirement; education; or other possible contingencies in the product design. The value of these benefits is frequently tied to the account value. Non-elective benefits that are not currently common could be developed for annuities simply for the purpose of reducing reserves.
Group B	These are benefits with value greater than the account value that can be forfeited if the contract terminates under a Group A benefit. Examples include guaranteed living benefits applying proceeds in excess of account values or guaranteed minimum death benefits in excess of account values (GMDBs).

The combination of these benefits, together with unrestricted use of non-elective incidence rates for Group A benefits, may result in a reduced statutory reserve if precautions, not currently included in the current text of AG33, are not taken in the reserving process.

Group A benefits are available in many fixed and variable annuity contracts.

Group B benefits are relatively recent additions to fixed (including fixed indexed) annuity contracts though GMDBs paying a designated percentage of the gain in the contract (in addition to account value) upon death have been available for many years. Variable annuity contracts have included similar benefits for many years. When added to a fixed annuity contract, a guaranteed living benefit applying proceeds in excess of account values is known as a Guaranteed Lifetime Income Benefit (GLIB) if the benefits are guaranteed for life. GLIBs generally provide for an additional value, not to be confused with the account value, to which premiums are added, any charges for the benefit may be deducted, and the balance accumulated at rates generally in excess of those applied to the account value. This balance cannot be accessed as value but is primarily or solely for the purpose of determining GLIB payments amounts when the GLIB is exercised. Partial withdrawals are deducted from both this additional value and the account value. As long as withdrawals each year do not exceed a maximum amount determined at the start of the withdrawal stream, continuation of the withdrawal stream is guaranteed to continue for life, even if both the account value and the additional value are completely exhausted.

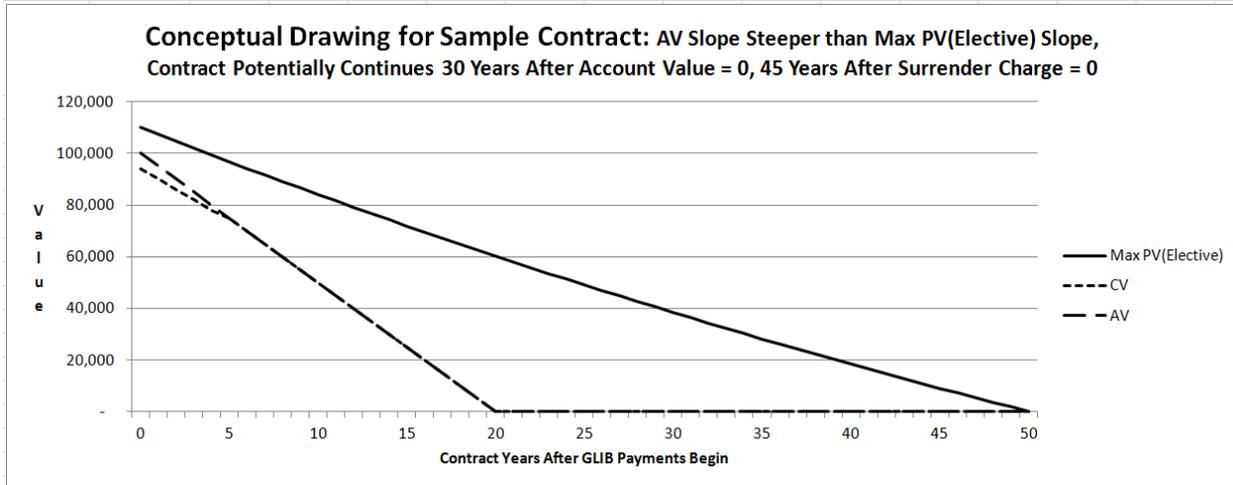
It is important to understand that, just because the account value is zero, a policy having a GLIB benefit can still have a guaranteed value to the contract owner (e.g., lifetime withdrawals, lifetime income), and contract owners would not knowingly forfeit this value for nothing in return.

For purposes of the remainder of this report, the term GLIB will be used to represent all the benefits of the GLIB, GLWB, and GMWB type.

The potential reserve issue occurs because AG33 can be interpreted as allowing the incidence rates for non-elective non-mortality benefits to be in effect *for the life of the contract*. For contracts without a GLIB or a GMDB, the life of the contract is generally terminated when the account value is depleted, usually by contract owner action such as surrender or some form of annuitization. However, for contracts with a GLIB or a GMDB, the life of the contract may not be terminated when the account value reaches zero. In fact, these contracts may contain benefits for many years after the account value is depleted.

Would a contract owner be likely to report a non-elective non-mortality claim in order to (i) collect no additional benefit but also (ii) diminish any remaining Elective Benefits? A reported claim and collected benefit is what would be assumed within an integrated benefit stream by applying non-elective incidence rates to Group A benefits after surrender charges have already declined to zero, or when the account value is zero.

Following is a graphical representation of the issue. The conceptual drawing shows, for an individual sample contract with a GLIB, the cash value (CV), account value (AV) and Maximum PV Elective Benefits. It is important to note that the Maximum PV Elective Benefits line assumes that incidence rates for non-elective non-mortality benefits have been set to zero. It is assumed that the contract owner has just elected to start collecting GLIB payments and five years of surrender charges remain at the time of GLIB election. The contract reaches an AV of zero 20 years after GLIB exercise. The pattern is more important than the specifics or exact product design of the sample contract.



The most important item to notice is that the slope of the AV line in this example is considerably steeper than the Maximum PV Elective Benefits line. Frequently, incidence rates for non-elective non-mortality benefits, such as nursing home waiver, increase with attained age. Application of those incidence rates could result in final reserves below the Maximum PV Elective Benefits line by effectively assuming that a percentage of contract owners will receive the account value instead of the higher Elective Benefits. (Note that none of the lines represents final reserves under current AG33, which would be somewhere between the dashed lines and the solid line.)

The simple fact that the final reserves are less than the Maximum PV Elective Benefits line is not always an inappropriate result. It depends on the magnitude and the likelihood of the non-elective, non-mortality claim being reported. This is in contrast to mortality claims where it is perfectly understandable that the beneficiaries of contract owners that die might only collect the AV and any existing GMDB instead of the Maximum PV Elective Benefits.

In the sample contract shown, we would surmise that no non-elective non-mortality claim is likely to be reported any later than several years after GLIB election. Claim reporting is unlikely after the end of the surrender charge period because there is no extra amount to collect by making a claim and very unlikely after the AV is depleted because there is nothing to collect.

Mathematically, if the non-elective non-mortality incidence rates were set to zero after a period of time, the final reserves would equal the Maximum PV Elective Benefit line after that period of time. Reserves for contract years prior to that point would essentially grade to that same Maximum PV Elective Benefit line at the point in time when the non-elective non-mortality incidence rates are set to zero.

Numerical Example

To demonstrate the potential magnitude of the issue, several variations of an AG33 calculation are shown below for a different sample contract than used for the conceptual drawing.

The following table shows reserves; cash values for various lengths of time incidence rates are used. The sample contract is issue age 55, female, \$100,000 single premium, 10-year surrender

charge schedule with a Nursing Home Waiver, and a GLIB with a rollup rate of 6%. Account values have assumed that interest was credited prior to the valuation date at 2% per year. Other specifics of the product design are in Appendix 3.

Table 1: Reserve by Contract Year Prior to Comparison to CV

	Incidence Rate Period for Nursing Home Waiver	Issue	5	10	15	20	GLIB Exercise and Annual Payment
1	No Incidence	108,569	131,024	158,740	193,873	158,515	Yr 16: 15,242
2	Incidence to SC=0	107,821	130,322	158,740	193,873	158,515	Yr 16: 15,242
3	Incidence to AV=0	100,415	121,309	147,557	123,712	87,683	Yr 14: 13,113
4	Incidence for Life of Contract	88,659	103,031	124,573	105,039	74,977	Yr 12: 11,268
5	No GLIB	89,497					

The GLIB was assumed to be exercised at the optimal year. The optimal year is shown in the “GLIB Exercise and Annual Payment” column and varies by the length of the incidence rate period. The Nursing Home incidence rate increases as the contract owner ages, thus the claims over time applicable to this non-elective benefit have an increasing effect on the value of remaining elective benefits.

Table 2: Cash Value by Contract Year

	Incidence Rate Period for Nursing Home Waiver	Issue	5	10	15	20
1	No Incidence	90,000	99,163	107,286	109,528	29,709
2	Incidence to SC=0	90,000	99,163	107,286	109,528	29,709
3	Incidence to AV=0	90,000	99,163	107,286	83,161	12,986
4	Incidence for Life of Contract	90,000	99,163	107,286	63,772	2,344
5	No GLIB	90,000				

Note that both the Incidence for Life of Contract and the No GLIB variations would be floored at the Cash Value of 90,000 at issue (bold values in table). All other values exceed cash values. Cash values vary according to the timing of the GLIB exercise and the GLIB payment applicable for that start year.

Table 3: Ratio Comparison to Incidence until SC=0

	Incidence Rate Period for Nursing Home Waiver	Issue	5	10	15	20
1	No Incidence	100.7%	100.5%	100.0%	100.0%	100.0%
2	Incidence to SC=0	100.0%	100.0%	100.0%	100.0%	100.0%
3	Incidence to AV=0	93.1%	93.1%	93.0%	63.8%	55.3%
4	Incidence for Life of Contract	82.2%	79.1%	78.5%	54.2%	47.3%

Table 3 ratios are a comparison of Table 1 Reserve by Contract Year (ignoring cash value floor) to the “Incidence to SC=0” Reserve. In these examples, a company using incidence for the Nursing Home Waiver on contracts with a GLIB, either until AV=0 or for the life of the contract, starts out with lower reserves at issue and the differences increase over time.

Conclusions

As annuity product designs continue to evolve and incorporate complex benefits, it becomes increasingly important to understand the reserve implications throughout the contract life cycle of each individual benefit and various combinations of benefits within the same contract. As contracts prospectively age in the reserve calculation, the differences in reserves due to the interaction of benefits can increase over time due to the incidence rate period and increasing incidence rate level.

Further Implications

A related concern is that many policy forms are written to allow “stop and start” GLIB payments after GLIB exercise; therefore it may be possible to assume in the reserve calculation an annual GLIB payment less than 100% of the maximum GLIB payment. Although a few contract owners may not actually collect the full GLIB payment in a given year, it may be inappropriate to assume any contract owners collect less than 100% of the maximum GLIB payment each year after GLIB exercise.

Attachments:

Appendix 1: Proposed AG33 Language

Appendix 2: Discussion of Possible Approaches

Appendix 3: Specifics of Sample Contract Product Design

Appendix 1

Proposed AG33 Language

We have identified five approaches to modifying AG33, denoted A, B, C, D, and E. Understanding these approaches, described and discussed in Appendix 2, is important for full comprehension of recommended revisions.

The following recommended revisions are suggested in three locations to the text of AG33 reproduced below (Additions to existing text are underlined, deletions are ~~struck through~~):

Background Information

3. Application of Incidence Rates in CARVM

Since CARVM was adopted, there has been an increase in the types of benefits offered under certain annuity contracts, including enhanced death benefits, nursing home benefits, and various partial withdrawal provisions, including some depending on values other than the values used to determine cash values and that may allow for benefits to continue past the point where the cash value is zero. For some of these benefit types, the SVL is not explicit as to whether incidence tables prescribed under the SVL may be used to determine such benefits, versus requiring consideration of all contract owner options available under the contract, and choosing the set of incidence rates which produce the greatest present value.

Definitions

1. Elective and Non-Elective Benefits in CARVM

In some cases it may not be clear whether some benefits are elective or non-elective. The presence of certain types of non-elective benefits may affect other non-elective benefits and/or elective benefits. ~~For example, some annuity contracts offer benefits which vary depending upon the age of retirement. In such cases,~~ †The Valuation Actuary should use judgment in making these determinations, by considering factors such as the degree to which contract owner actions would be influenced by the availability of ~~the~~ each benefit in the contract.

2. Elective and Non-Elective Incidence Rates in CARVM

For non-elective benefits, incidence rates from tables prescribed by the SVL should be applied to determine the payment of non-elective benefits and to discount, for survivorship, all benefit payments included in an Integrated Benefit Stream, as defined below. If no incidence tables are prescribed by the SVL, then company or industry experience (with margins for conservatism) may be used, as appropriate. For non-elective waiver-of-surrender-charge benefits other than mortality-based benefits, incidence rates greater than zero are not to be applied after the earlier of the end of the surrender charge period applicable immediately

after the first premium is paid or when the cash value has been depleted. For non-elective benefits other than mortality-based benefits, incidence rates greater than zero for non-elective benefits where it is unlikely that a contract owner would report a claim or make an election (such as collecting one benefit while other more valuable benefits exist in the contract) and that would thereby place a smaller reserve value on the contract's other benefits should not be considered to the exclusion of other incidence rates that would result in a larger reserve. Annuity mortality tables prescribed by the SVL should be used to determine all mortality based benefits under the contract (including, but not limited to, annuitizations and death benefits) and to discount other types of benefit payments for survivorship.

Appendix 2
Discussion of Possible Approaches

Various approaches to amending AG 33 that might be considered are summarized and subsequently discussed in further detail.

Although surrender charge waiver benefits are mentioned throughout what follows, benefits that are not strictly waiver-of-surrender-charge benefits might have similar reserve effects. The waiver-of-surrender-charge benefit generally makes available a portion or all of the account value to the contract owner upon the occurrence of a qualifying event. Because a portion or all of the surrender charges remaining on the contract are “waived,” the benefit is referred to as a waiver benefit even though no premium payments are waived. The contract typically terminates when the contract is surrendered and the full account value is withdrawn through the benefit despite the existence of other benefits, such as GLIBs or GMDBs.

Approach	Action Taken Within Each Integrated Benefit Stream
A	Compare the non-elective non-mortality waiver benefit PV to the elective benefit with the highest PV and use the higher PV of the two choices.
B	Ignore non-elective non-mortality waiver benefit incidence rates entirely.
C	Turn off non-elective non-mortality waiver benefit incidence rates when the initial surrender charge period ends.
D	Use another reasonable approach to turn off non-elective non-mortality waiver benefit incidence rates at a duration when the contract still has significant account value remaining.
E	Turn off non-elective non-mortality waiver benefit incidence rates when the account value is zero.

Approach	Action Taken Within Each Integrated Benefit Stream
A	Compare the non-elective non-mortality waiver benefit PV to the elective benefit with the highest PV and use the higher PV of the two choices.

Approach A, which is one of the end points in the spectrum of possible approaches presented, involves breaking the waiver benefit into two pieces. The first piece is the non-elective incidence rate. Incidence has to be projected to occur to trigger the second piece of the benefit. The second piece is a decision by the contract owner (or representative) to make a claim. It involves comparison of the present value of the non-elective non-mortality waiver claim to the maximum present value of elective benefits. Because the second piece of the benefit is elective, it is assumed a fully informed contract owner (or representative) makes the optimal decision between reporting a non-elective non-mortality waiver claim and continuing the contract with the available elective benefits. Only reporting of a death claim is obligatory; reporting of a non-mortality claim is always optional.

While this approach initially sounds theoretically pure, substantial calculation difficulties exist within the current structure of AG33. The non-elective incidences occur first due to their non-

elective nature (e.g., the elective benefit assumed in the integrated benefit stream is discounted for non-elective incidence rates). The theoretical problem is whether the maximum present value of elective benefits does or does not include usage of non-elective non-mortality incidence rates prior to the comparison.

The most reasonable calculation is not very practical because the actuary would have to calculate a reserve one time with incidence rates greater than zero and a second time with incidence rates set to zero and then use the higher of the two reserve values. Worse, there may be multiple benefits where this double calculation might be required, dramatically increasing the amount of calculation time and chance for error.

The double calculation does not completely satisfy approach A because, theoretically, the calculation would have to check at assumed incidence whether the non-elective benefit present value at that moment is at least as great as the maximum present value of elective benefits, leading to a potential circularity. The potential circularity occurs because the maximum present value of elective benefits may change based on the non-elective incidence rates used. This was demonstrated in Table 1 where the optimal GLIB exercise year changed solely on the non-elective incidence rates used. There could be product designs where an incidence ignored at one point in time is used later when the non-elective benefit is the maximum value.

This approach would require system modifications and simplifying assumptions or internal approximations. Finally, it would always be difficult to know whether an input incidence rate was ever used or had any effect on the reserve.

For these reasons, we do not recommend Approach A as the standard non-elective non-mortality waiver approach.

Approach	Action Taken Within Each Integrated Benefit Stream
B	Ignore non-elective non-mortality waiver benefit incidence rates entirely.

Approach B reflects a realization that including the non-elective non-mortality waiver incidence rates (when the benefits are combined with other benefits) reduces the reserve in aggregate. It thus ignores the non-elective non-mortality waiver benefit entirely for reserve calculation purposes.

The limitation of this approach is that when contracts with GLIBs or GMDBs are mixed with contracts without GLIBs and GMDBs, such as when one extract contains all the contracts, the reserve may appear to be reasonable in aggregate; however, it may not be reasonable on a contract-by-contract basis. The reserve for contracts without GLIBs and GMDBs could be lower than the theoretically correct reserve by ignoring these incidence rates. The reserve for contract with GLIBs and GMDBs could be higher than they would be if incidence rates were used. It then depends on mix of business as to whether the reserve is reasonable in aggregate.

Some specialized uses where adoption of Approach B might be appropriate could include “incidental” or “slight timing” benefits that have small present values relative to other values in

the contract. Examples might include waiver of an annual or other fee or a slight acceleration of benefits when death may be expected to closely follow upon the occurrence of a contingent event (e.g., a terminal illness waiver).

Due to the limitation, we do not recommend Approach B as the standard non-elective non-mortality waiver approach. However, it may have specialized uses for specific benefits if the aggregate reserve reasonableness can be demonstrated.

Approach	Action Taken Within Each Integrated Benefit Stream
C	Turn off non-elective non-mortality waiver benefit incidence rates when the initial surrender charge period ends.

Approach C can be described as the “cutoff” method. It is closest to the traditional view of non-elective non-mortality waiver incidence rates. Published sample calculations, available on the Society of Actuaries website by searching on article titles, have used the cutoff method, though not describing it precisely in that fashion: (1) *Record of the Society of Actuaries Volume 23, No. 3, Annual Meeting 1997, Session 15TS “Deferred Annuity Reserving – Guideline 33”, pages 18-19*; (2) *The Financial Reporter, March 1998, “Visual CARVM: Multiple-Benefit Streams in Pictures.”* In those published examples, the waiver benefit only had an effect on reserves until the end of the surrender charge period.

It could be argued that no extra benefit exists after the end of the surrender charge period whether or not a qualifying incidence occurs. If the same amount can be withdrawn either after a qualifying incidence or by merely making an elective request, it is likely inappropriate to continue using those incidence rates.

Limitations exist with a pure application of this approach. Product designs may include contracts renewing for another surrender charge schedule period after the initial one. Product designs may include flexible premiums with surrender charges based on premium duration rather than contract duration. Perhaps a product could be designed with a surrender charge schedule containing many durations. In all of these product designs, the account value may be decreasing relative to other benefits due to annual GLIB payments after the GLIB exercise, making it less and less likely through time that a non-elective non-mortality waiver benefit would actually be made even with a qualifying incidence.

The limitations may be mitigated by setting incidence rates to zero at the earlier of the end of the initial surrender charge period or when the account value is zero. Subsequent premiums or surrender charge renewals do not extend the usage of incidence rates past the surrender charge period that exists immediately after the initial premium is paid.

With these limitations mitigated, we recommend Approach C as the standard non-elective non-mortality waiver approach.

Approach	Action Taken Within Each Integrated Benefit Stream
D	Use another reasonable approach to turn off non-elective non-mortality waiver benefit incidence rates at a duration when the contract still has significant account value remaining.

Approach D is a general admonition to apply non-elective non-mortality incidence rates only when the benefit value is known to compare well to other benefits available in the contract. This approach may require a demonstration of relative value.

If the non-elective benefit present value had to be greater than the maximum present value of elective benefits, this approach would be the same as approach A with all of its calculation difficulty. For this approach the standard is whether a sufficiently high proportion, say 80%, of contract owners would chose the non-elective non-mortality benefit after an incidence instead of other values available in the contract. This high proportion would obviously only occur well prior to when the account value is zero if the benefit is account-value based.

The account value may be decreasing even prior to reduction by GLIB payments due to rider charges exceeding interest credits.

It is relatively easy to create non-elective non-mortality benefits that economically behave similar to waiver-of-surrender-charge benefits without referencing surrender charges in any way.

The difficulty is finding a way to demonstrate value acceptable to all the stakeholders. Any applicable industry or company experience may be helpful in creating this demonstration. It is likely difficult to create a standard approach D rule that fits all situations and meets the requirements of all the stakeholders.

For these reasons, we do not recommend Approach D as the standard non-elective non-mortality waiver approach. However, it may have specialized uses for specific benefits if an acceptable demonstration of relative value can be created.

Approach	Action Taken Within Each Integrated Benefit Stream
E	Turn off non-elective non-mortality waiver benefit incidence rates when the account value is depleted.

Approach E is the other end point. It is necessary to turn off incidence rates when the account value is depleted; however, at that point it is too late in the contract life cycle to assume no incidence.

Generally, if surrender is not considered reasonable, a non-elective non-mortality benefit payment is not reasonable either. There are no choices after death, but for any other non-mortality incidence there is some amount of consideration of the various values in the contract and a choice whether to report a qualifying incidence.

Some proportion of contract owners will make choices that are not economically optimal as long as there is positive account value remaining in the contract to withdraw. However, a contract owner cannot be expected to withdraw zero account value and terminate the contract when other benefits of any value are available in the contract by continuing it in force.

We do not consider this approach sufficient because there may be a significant number of contract durations prior to account value depletion where other available value relative to remaining account value may influence contract owner behavior.

We do not recommend Approach E.

Appendix 3

Specifics of Sample Contract Product Design

Drivers of the reserve differences are non-elective non-mortality incidence rates & their usage and the “richness” of the GLIB and/or GMDB. Lower incidence or shorter incidence time period will decrease reserve differences. Less rich GLIB and/or GMDB will decrease reserve differences. A minimal GLIB and/or GMDB might not show much reserve differences.

Sample Contract Specifics:

1. Single Life, Female, Issue Age 55, \$100,000 initial premium at issue, no premium bonus. 10-yr surrender charge schedule based on contract duration (AV %):
10 – 9 – 8 – 7 – 6 – 5 – 4 – 3 – 2 – 1 – 0.
2. Nursing Home Waiver uses 1985 NHHS 90-day elimination period.
3. No other non-elective non-mortality benefit is present. Non-elective mortality applies throughout the life of the contract.
4. GLIB has a 6.0% rollup rate for 10 years with one renewal for 20 years total. Renewal is always assumed to occur.
5. Rider charge is 90bps of benefit base, including after GLIB exercise.
6. GLIB payment percentage varies by attained age at GLIB exercise from 4.0% at age 50 to 8.0% at age 90 linearly. GLIB payment percentages by attained age: 55, 4.5%; 60, 5.0%; 65, 5.5%; 70, 6.0%; 75, 6.5%; 80, 7.0%; 85, 7.5%.
7. Annual GLIB payment is set when the GLIB is exercised and is calculated as the GLIB payment percentage applicable to the attained age at exercise multiplied by the Benefit Base. The benefit base cannot be is not withdrawn.
8. GLIB payment is always collected in full each year after GLIB exercise.
9. GLIB is exercised at the exact point of its maximum PV, which varies by usage of Nursing Home Waiver incidence rates.
10. No GMDB is present in the contract. The only death benefit is to pay the account value upon death (also known as a waiver of surrender charges upon death).
11. Assume at each aging point the contract owner has lived and has not taken any free partial withdrawals (GLIB payments are not considered free partial withdrawals). Elective free partial withdrawals and elective surrenders were checked as reserve candidates, however, never contributed to the reserve as they were never optimal.
12. The guaranteed minimum interest rate is 1.0%. The interest credited rate resets annually. It is assumed that the contract is credited with 2.0% annual interest for any period prior to the valuation date.